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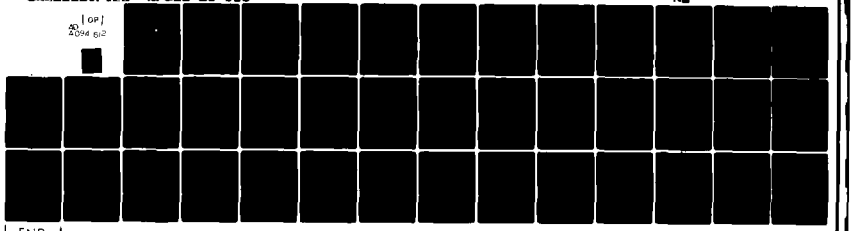

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ESTIMATES OF THE OFFICER FORCE STRUCTURE. REQUIRED TO MAN THE PROJECTED NAVAL COMBATANT FORCES OF THE 1980s AND 1990s

by

E. V. Alden

October 1980

Prepared for
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Washington, D.C. 20350
Chief of Naval Operations
Washington, D.C. 20350

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The Navy policy maker is faced with a great deal of uncertainty when he attempts to formulate manpower plans for the Navy's future officer force structure. Many of these factors are beyond his control; however, there are a few critical factors over which he may exert considerable influence. It is the identification of some of these factors and their impact upon the combatant forces of the Navy of tomorrow and thus the required officer force structure with which this thinkpiece is concerned.

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ESTIMATES OF THE OFFICER FORCE STRUCTURE REQUIRED TO MAN THE PROJECTED NAVAL COMBATANT FORCES OF THE 1980s AND 1990s.

E. V. ALDEN

Introduction

This study is part of the Requirements Models for Navy Officer Billets portion of the proposed NPS research effort to develop an integrated officer system planning model; the purpose of this study was to conduct preliminary exploratory research to provide a thinkpiece for policy makers which would provide insight on the total problem of attempting to model the Naval officer force structure as a system. This study considers the primary first order factors which drive the requirements for officers to man the combatant elements of the Navy; later effort in the Requirements Models for Navy Officer Billets will attempt to proceed from this study to consider the total operational forces and consequently to model the requirements and workload measurements necessary to determine Navy-wide requirements at the organizational level.

The Navy policy maker is faced with a great deal of uncertainty when he attempts to formulate manpower plans for the Navy's future officer force structure. Many of these factors are beyond his control; however, there are a few critical factors over which he may exert considerable influence. It is the identification of some of these factors and their impact upon the combatant forces of the Navy of tomorrow and thus the required officer force structure with which this thinkpiece is concerned;

as such, it was deemed appropriate to keep this paper at the unclassified level.

This spring, in his testimony before Congress, Admiral James L. Holloway, III, then Chief of Naval Operations, used the following diagram to help explain part of the process involved in the generation of future Naval force requirements. With the

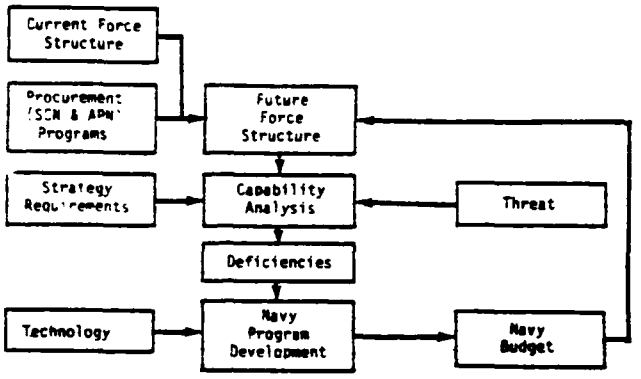

Figure 1. Force Structure Assessment of Naval Capabilities.*

possible exception of the "Navy Program Development" block of Figure 1, the Navy manpower policy maker exerts very little influence upon this process. Faced with this highly complex, uncertain process, what can the manpower policy maker do?

Because of the long leadtime associated with Naval systems and in spite of the uncertainty associated with trying to predict the required future force structure the manpower policy maker must develop rational plans for the future; he is forced to

*Source: U.S. Congress. Senate. Committee on Armed Services, Hearings..., pt 2: Authorization Budget Priorities and Management Issues, p. 1184, U.S. Govt. Print. Office, 1978.

develop plans and policies for systems which are being developed now, but will be with us for the next 20 to 30 years. The key question is how can we reduce the uncertainty (for we surely cannot eliminate it) to make better plans for the future. We cannot forecast the state of the national economy or the policy (which drives the budget allocations) associated with a perceived threat in the distant future. However, we can "forecast" at least a portion of the systems and platforms which will compose the future force structure. In addition, we can monitor current technologies and possibly foresee "technological potentials" which may impact the future. Finally, the manpower policymaker can influence internal Navy policy which impacts the future officer force structure.

Figure 2 is an attempt to simplify (admittedly a gross oversimplification) our perspective of the process of deriving officer requirements for the future force structure. One of the major (if not the major) determinants of the future force structure is the current force structure; needless to say, the policy maker has little influence over this "given" factor. The threat, both current and evolving, is another factor over which he exerts little influence. Two other factors which exert high impact upon the future force structure are policy and technology; both of these factors have a high degree of uncertainty associated with them.

The remainder of this paper will examine these two areas of uncertainty. The policy factor may be viewed as being composed of two components: (1) External policy over which our Navy

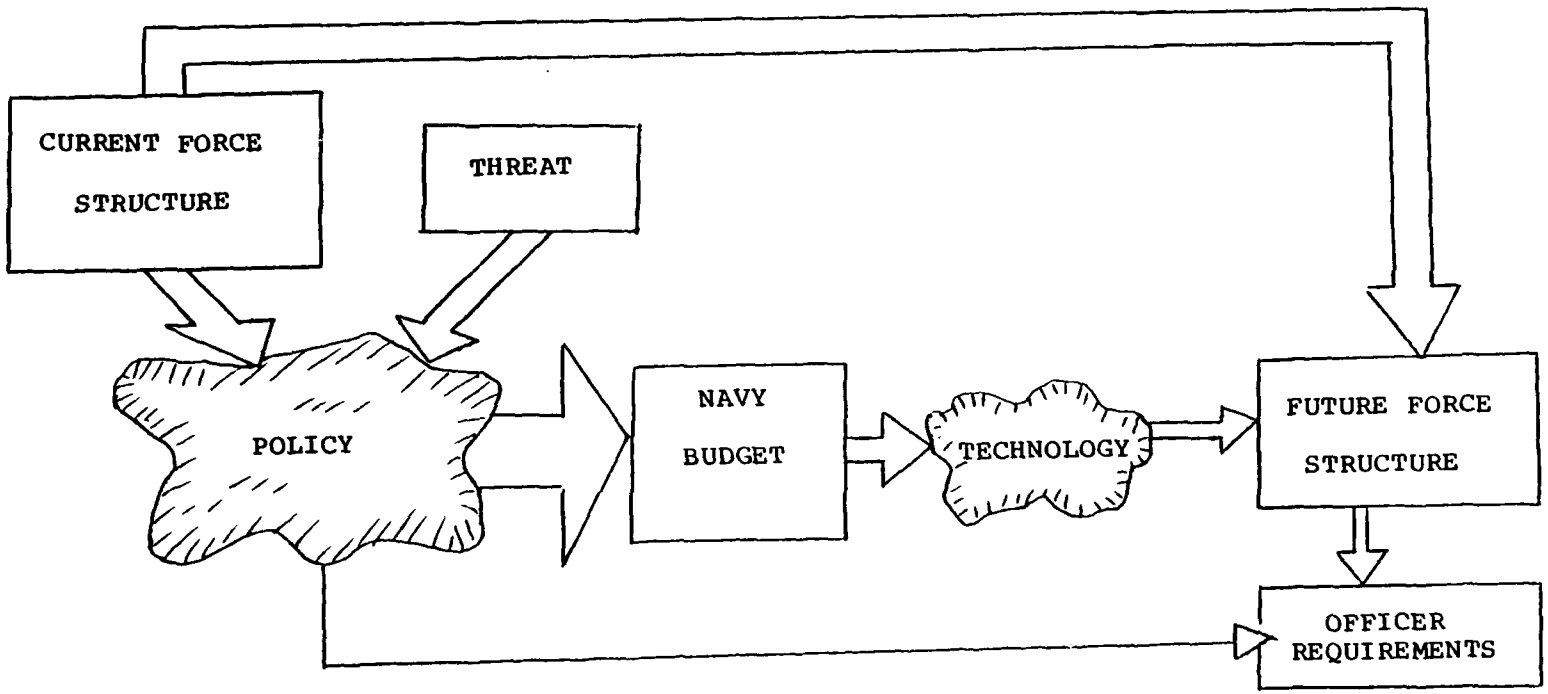

Figure 2. Derivation of the Future Navy Force Structure and Officer Requirements.

manpower policy maker exerts very little influence (e.g., national policy reacting to a perceived threat), and (2) internal Navy policy over which he may exert a great amount of influence (e.g., ship officer manning standards. In the area of technology, we will examine those emerging technologies which have a high potential to impact the future force in terms of weapons and platforms. To screen our "technological potentials" we will use three questions to determine their relevance: (1) Does or can it make any difference (to the force structure)?, (2) Are we willing to pay the price (to bring the potential technology to fruition)?, and (3) What is the possible impact upon the Naval officer force structure? By highlighting these promising "technological potentials" we can provide the decision maker an "alert flagged" set of areas upon which to focus his consideration for future planning.

Projecting Combatant Force Levels

The structure of any large organization, including the U.S. Navy, is (or should be) determined by the answer to the strategic policy question--What business are we in? It is assumed that the primary business or mission in which the Navy is engaged is to help actualize national policy objectives through the application of seapower. In order to provide a manageable scope for this initial effort, an attempt was made to categorize the force structure of the Navy by the degree of "centrality" (or how close) each part of the forces are to this mission. Figure 3 is a depiction of this categorization. It was concluded that those forces in Category I composed of warships, other combatant ships, carrier

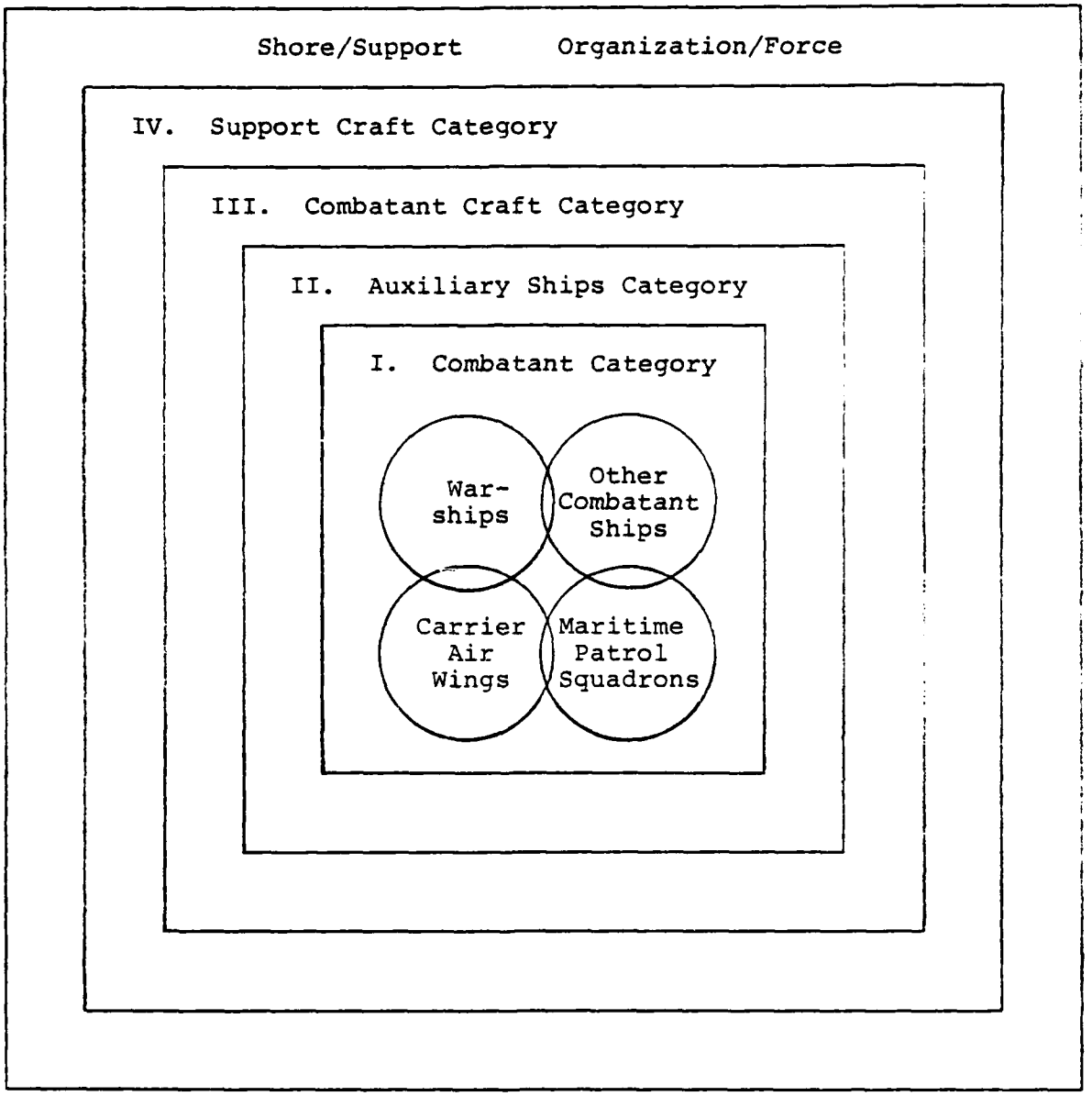

Figure 3. Categorization of Naval Force Structure.

air wings, and maritime patrol squadrons were most "central" and would provide a manageable framework for this study effort. The other force categories will be covered in the follow-on study effort.

It was discovered that the errors associated with using open literature and/or unclassified data sources to project combatant force levels for the 1980s and 1990s were smaller than the "errors" resulting from policy change resulting from a changed perception of the threat from one political administration to the next; therefore, only unclassified sources were used for this initial study effort.

In order to determine the Naval force impact of the recent emphasis by the Carter administration of NATO readiness, this trend in the number of general purpose ships was projected as depicted in Figure 4. The projected numbers of general purpose ships in 1990 are depicted for both the last Ford administration budget and for the FY79 Carter administration budget. The difference is a total of 90 ships (548 for Ford versus 458 for Carter budgets) or a decrease of approximately 16% from one administration to the next. As we shall see, this change in national policy will have a large impact upon the future Naval officer force structure.

In order to obtain projections of the required officer force structure to man the combatant category forces, OPNAV 121 forwarded representative Manpower Authorization Forms (OPNAV 1000/2 [Rev. 9-76]) to the Naval Postgraduate School.* The

*OPNAV ltr, Ser 121E3/91-78 dtd 20 JUN 78, Subj: Requested Data, Forwarding of.

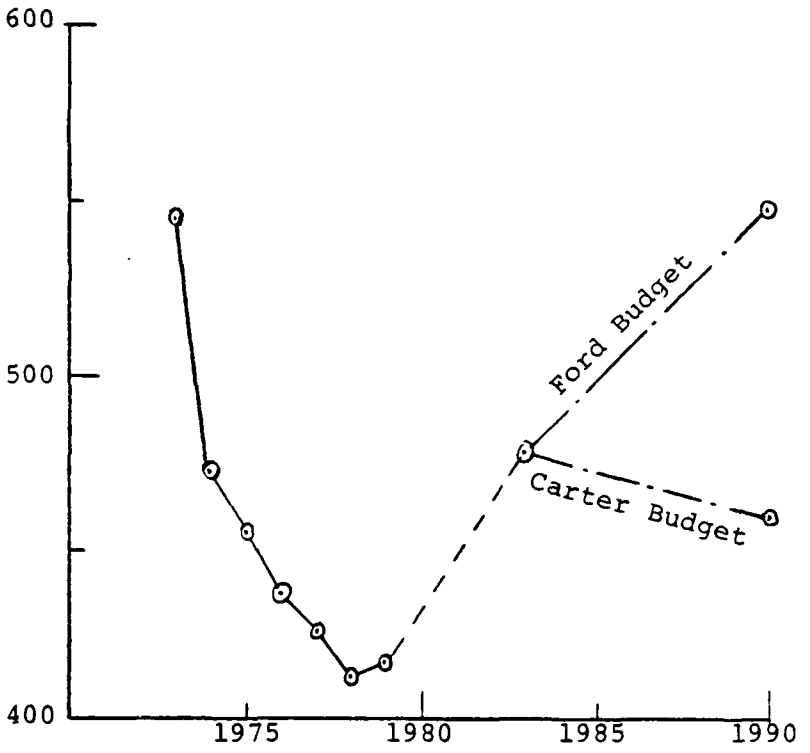

Figure 4.

Projections of Numbers of General Purpose Ships (excludes SSBNs) for Ford and Carter FY79 Budgets.

Sources: Pechman, Joseph A. (Editor), Setting National Priorities - The 1978 Budget, The Brookings Institute, D.C., 1978, p. 255, and Chief of Naval Operations, "Historical Budget Data," booklet, CNO, March 1978, p. 10.

"representative types" which were used to estimate the officer force structure are listed in Table 1. From this data Tables 2-5 were constructed to depict the required officer billets by rank to man the various combatant platforms for the current (1978 "Combatant Category" force structure; Table 6 is a summary table. From these data a corresponding set of data for selected years was constructed (see Tables 7 and 8) for the years 1978, 1983, and 1990. Table 9 and Figure 5 depict the projected officer billets for the "Combatant Category" required to man the combatant operational forces for the selected years.

The number of officer billets in the air community will not change much by 1990 because the assumption is that there will only be twelve carrier air wings and twenty-four land-based maritime patrol squadrons (the 1990 Ford budget included 14 CAWs) These data do not reflect the increasing number of aviators that will be required on various "air capable" ships (e.g., LAMPS detachments) nor the impact of possible national/Navy policy decisions regarding the future status and nature of Naval aviatio (the V/STOL technology progress will have a definite impact upon the resolution of this issue).

The submarine community will experience a slight overall decrease in required officer billets as increases in attack boats are offset by decreased numbers of ballistic missile boats (both for the Ford and Carter projections).

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*Note: The tabular data only include "authorized manpower" for this platforms; Flag staffs and other (e.g., LAMPS detachments) are not included.

Surface Warships:

CV 64	Constellation
CVN 68	Nimitz
CG 16	Leahy
CGN 36	California
DD 965	Kinkaid
DDG 7	Wilson
FF 1078	Hewes
FFG 6	Furer
FFG 7	Perry*

Other Combatant Ships:

LCC 19	Blueridge
LPD 13	Nashville
LPH 2	Iwo Jima
LST 1183	Peoria
LHA 3	Belleau Wood
LSD 36	Anchorage
LKA 117	El Paso
PHM 1	Pegasus
MSO 449	Impervious

Submersible Warships:

SSN 676	Billfish
SSBN 598	Washington
SSBN 727	Michigan

Carrier Air Wing:

F-14 (VF-1)
F-4J (VF-11)
A-6E (VA-34)
A-7E (VA-12)
EA6B (VAQ-129)
E 2B (VAW-112)
E 2C (VAW-121)
RA5C (RVAH-7)
S-3 (VS 21)
SH-3 (HS 12)

Maritime Patrol Squadron:

P3B (VP 17)
P3C (VP 44)

Table 1.

List of Manpower Authorization Forms OPNAV 1000/2 (Rev. 9-76) by "Representative Platform Types" used to Estimate the Required Officer Force Structure Necessary to Man the "Combatant Category" Platforms.

*Manning Data for FFG-7 taken from article by CAPT John D. Beecher, USN, FFG-7: The Concept and Design, U.S. Naval Institute Proceedings, pp. 148-153, March 1978.

Type \ Rank	CAPT	CDR	LCDR	LT	LTJG	ENS	WO	Total
CVN	1	18	25	44	19	16	22	145
CV	1	17	21	49	15	16	22	141
CGN	1	1	4	7	8	8	--	29
CG*	1	1	4	6	7	3	2	24
DDG	-	1	2	3	4	7	2	19
DD	-	1	1	4	7	5	-	18
FFG-1	-	1	1	4	5	4	1	16
FFG-7	-	1	1	5	3	1	-	11
FF	-	1	1	4	4	6	-	16
SSN/SS	-	1	2	3	5	1	-	12
SSBN-598	-	2	6	4	10	2	-	24
SSBN-727	-	2	8	12	6	-	-	28

Table 2.

Officer Billets by Warship Type and Rank (1978).

*Data for cruiser flagships were not available; therefore, the "representing CG" data were used.

Type \ Rank	$C_{A_{P_T}}$	C_{D_R}	$L_{C_{D_R}}$	L_T	$L_{T_{J_G}}$	E_{N_S}	W_O	Total
LCC	1	2	6	10	6	8	8	41
LPD	1	1	1	7	5	5	4	24
LPH	1	3	9	8	8	5	10	44
LST	-	1	1	3	2	4	1	12
LHA	1	4	10	14	8	10	5	52
LSD	-	2	-	4	5	3	4	18
LKA	1	1	1	6	6	5	4	24
Patrol	-	-	1	3	2	-	-	6
Mine Wfr	-	-	1	-	2	1	-	4

Table 3.

Officer Billets by "Other Combatant" Type and Rank (1978).

Rank / Squadron Type	CDR	LCDR	LT	LTJG	ENS	WO	Total
Fighter: F-4/F-14	4	8	22	30	4	4	72
Lt Attack: A-7	4	8	8	20	-	2	42
Med Attack: A-6	2	4	8	20	2	1	37
Fixed Wing ASW: S-3	2	6	17	20	1	1	47
Rotary Wing ASW: SH-3	2	4	7	8	1	1	23
Reconnaissance: RA-5/RF-8	2	3	4	3	1	1	15
Electronic Warfare: EA-6	4	9	35	9	-	2	59
Early Warning: E-2	2	4	10	11	-	1	28
Tanker: KA-6*	2	4	8	20	2	1	37
Total	24	50	119	141	11	15	360
Total for 12 Active Wings	288	600	1428	1692	132	180	4320

Table 4. Officer Billets by Rank for Squadrons Composing a "Typical" Carrier Air Wing**

*NOTE: KA-6 manning assumed to be the same as A-6 squadron manning

**SOURCE: The Navy's Multimission Carrier Airwing--Can the Mission be Accomplished with Fewer Resources? GAO Report to Congress, LCD-77-451, 16 Nov 1977. Billet data from SQMDs. of "typical" airwing make-up.

Number / Rank X24 Active Squadrons	C_{D_R}	$L_{C_{D_R}}$	L_T	$L_{T_{J_G}}$	W_O	Total
Assumes Manning Equivalent to P-3C Squadrons	2 48	7 168	17 408	40 960	1 24	67 1,608

Table 5. Officer Billets by Rank for 24 Active Land-Based Maritime Patrol Squadrons.

(Assumes all squadron manning is the same as a typical P-3C squadron, 1978.)

Rank / Platform Types	CAPT	CDR	LCDR	LT	LTJG	ENS	WO	Total
Surface Warships	41	392	577	1314	1088	1154	404	4,970
SS/SSNs*	--	80	160	240	400	80	--	960
SSBNs	--	82	308	412	286	20	--	1,108
Other Combatants	32	106	160	381	317	308	254	1,558
12 Carrier Air Wings	--	288	600	1428	1692	132	180	4,320
24 Land Based Maritime Patrol Squadrons	--	48	168	408	960	--	24	1,608
Total	73	996	1,973	4,183	4,743	1,694	862	14,524

Table 6. Officer Billets by Rank for Various Combatant Platform Types (1978).

*SS manning assumed to be same as SSN manning for officers.

Warship Type \ Year	1978 Ships/Billets	1983 Ships/Billets	1990 Ships/Billets Ford	1990 Ships/Billets Carter
CVN	4/ 580	4/ 580	5/ 725	4/ 580
CV	9/1,269	9/1,269	10/1,410	9/1,269
CGN	9/ 261	10/ 290	10/ 290	9/ 261
CG	19/ 456	20/ 480	19/ 456	18/ 432
DDG	37/ 703	39/ 741	39/ 741	36/ 684
DD	37/ 666	39/ 702	38/ 684	36/ 648
FFG-1	6/ 96	6/ 96	6/ 96	6/ 96
FFG-7	1/ 11	64/ 704	150/1,650	109/1,199
FF	58/ 928	20/ 320	-- --	-- --
Surface Warship Total	180/4,970	211/5,182	277/6,052	277/5,169
SSN	80/ 960	90/1,080	87/1,044	84/1,008
SSBN*	10/ 240	4/ 96	-- --	-- --
SSBN**	31/ 868	31/ 868	21/ 588	21/ 588
SSBN***	-- --	4/ 112	13/ 364	13/ 364
SSBN Total	41/1,108	39/1,076	34/ 952	34/ 952
Total	301/7,038	340/7,338	398/8,048	345/7,129

Table 7.

Officer Billets by Various Warship Types Projected for Selected Years†

†Projected from Senate Armed Services Committee Hearings, Part 2, p. 1426 and Brookings, p. 255 and p. 264.

*Polaris
**Poseidon
***Trident

Note: All SSBNs have two crews; total number of SSBNs based on a limit of 656 missiles. (Manning assumed to be same as Poseidon SSBNs for officers.)

Other Combatant Type \ Year	1978 Ships/Billets	1983 Ships/Billets	1990 Ships/Billets Ford	1990 Ships/Billets Carter
LCC	2/ 82	2/ 82	2/ 82	2/ 82
LPD	14/ 336	14/ 336	14/ 336	14/ 336
LPH	7/ 308	7/ 308	7/ 308	7/ 308
LST	20/ 240	20/ 240	20/ 240	20/ 240
LHA	4/ 208	4/ 208	4/ 208	4/ 208
LSD	13/ 234	13/ 234	13/ 234	10/ 180
LKA	5/ 120	5/ 120	5/ 120	3/ 72
Total Amphibious	65/1,528	65/1,528	65/1,528	60/1,426
Patrol	4/ 18	6/ 36	16/ 96	10/ 60
Mine Warfare	3/ 12	4/ 24	11/ 44	7/ 28
Total	71/1,558	75/1,588	92/1,668	77/1,514

Table 8.

Officer Billets by Other Combatant Type Vessels Projected for Selected Years.*

*Projected from Senate Armed Services Committee Hearings, Part 2, p. 1427 and Brookings, p. 255.

Platform Type \ Year	1978 Billets	1983 Billets	1990 Billets Ford	1990 Billets Carter
Aircraft				
Carrier Air Wings	4,320	4,320	5,040	4,320
Maritime Patrol	1,608	1,608	1,608	1,608
Subtotal	5,928	5,928	6,648	5,928
Submarines				
SSN/SS	960	1,080	1,044	1,008
SSBN	1,108	1,076	952	952
Subtotal	2,068	2,156	1,996	1,960
Surface Combatants				
Warships	4,970	5,182	6,052	5,169
Other	1,558	1,588	1,668	1,514
Subtotal	6,528	6,770	7,720	6,683
TOTAL	14,524	14,854	16,364	14,571

Table 9.

Projected Officer Billets in Combatant Operational Forces for Selected Years

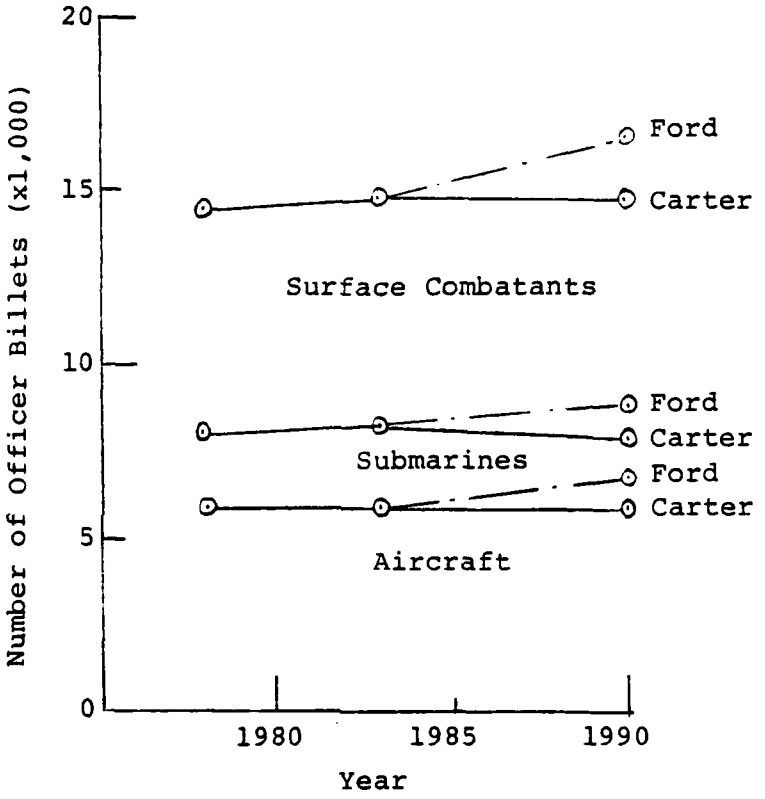

Figure 5.

Trends in Projected Officer Billets by Warfare Community for Combatant Operational Forces for Selected Years.

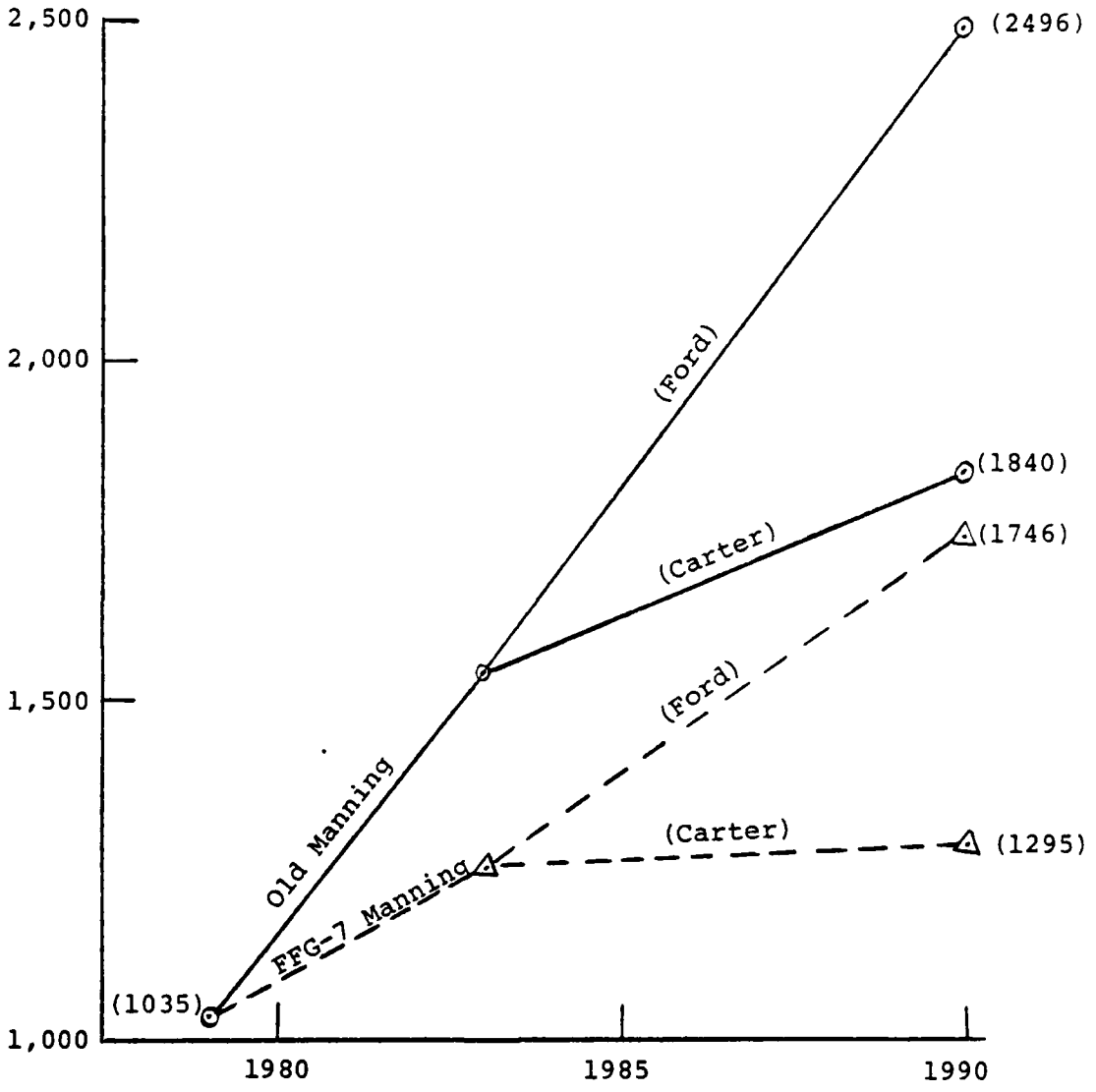

Figure 6.

Number of Officer Billets Required to Man Escorts for Old (FF & FFG-1 to 6) and New (FFG-7) Manning Standards Projected for Two Administration Budgets.

The surface community shows the greatest amount of change due to national policy changes. There would have been an increase of approximately 18% in officer billets from 1978 to 1990 had the Ford administration policy held; however, under Carter administration policy, the increase is only a little more than 3%, even though the number of surface combatant platforms increase by about 21% (from 251 in 1978 to 304 in 1990)--the cause of this disparity is primarily a change in Navy policy rather than a change in national policy!

Figure 6 graphically portrays the impact of the Navy's change in manning policy for escort class vessels. The new manning standards for the FFG-7 substitute enlisted men for officers in some divisions, resulting in a change from a total of 16 officers to man the older escort vessels to a total of 11 for the FFG-7 class (a decrease of about 31%). Thus the policy of "substitutability" will have a major impact upon the future officer force structure on escort vessels. It should be noted that this policy is one over which the manpower policy makers should exercise a great deal of influence.

We have drawn attention in this section to the uncertainty resulting from two types of policy changes: (1) National policy changes resulting from the manner in which two different administrations view the threat (the changing nature of the threat could well induce similar changes in the same administration) and (2) a change in Navy policy which the manpower policy maker should be able to influence. It should be noted before we examine the impact of technology that for the purpose of modelling the officer

force structure even finer resolution of officer billet data could be utilized; Table 10 depicts officer billets by major designator category and rank for CV-64 (the SMDs and Form 1000/2s give even greater detail).

Emerging Technologies Which May Impact the Force Structure

In his prepared statement to Congress this year, Admiral James L. Holloway, III, U.S. Chief of Naval Operations, said, "There are several areas of technology where exploitation could result in promising programs to improve Naval capabilities. In each case, a significant research and development investment will be necessary to promote those options to the level of full scale development and subsequent production and operational deployment,"*. The six areas of technology covered by Admiral Holloway were: (1) Vertical/Short Take-Off and Landing (V/STOL), (2) Cruise Missiles, (3) Advanced Hull Forms, (4) Lasers, (5) Satellite Systems, and (6) Computer Technology. In this section we will briefly explore these emerging technologies screening them for relevancy with our three critical criteria questions: (1) Does or can it make a difference (to the force structure)?, (2) Are we willing to pay the price (to bring the potential technology to fruition)?, and (3) What is the possible impact upon the Naval officer force structure?

The interaction of CNO's six emerging technologies with each other and with the crucial Naval function of command, control,

*U.S. Congress, Senate, Committee on Armed Services, Hearings... Part 2-Authorization Budget Priorities and Management Issues, GPO, 1978, pp. 1247-1250.

Rank / Designator	CAPT	CDR	LCDR	LT	LTJG	ENS	WO	TOTAL
1000				1				1
105X			1					1
111X			4	4	9	5		22
116X						3		3
130X	1	4	1					6
131X		7	5	13				25
132X			2	8				10
144X		1		1	1			3
152X		1	1	1	1			4
16XX			1	4				5
18XX			1					1
2XXX		2	2	4				8
3XXX		1	1	2		3		7
4XXX		1		1				2
6XXX			2	10	4	5		21
7XXX							22	22
Total	1	17	21	49	15	16	22	141

Table 10.

Officer Billets by Major Designator and Rank for CV-54 (Constellation)

communications, and intelligence (C^3I) is depicted in Figure 7. It is the author's opinion that three of the technologies--computers, satellites, and cruise missiles--will have the greatest impact upon the future of Naval warfare and force structure; consequently, we will discuss these areas first.

Computer Technology. The field of computer technology has experienced an explosive rate of growth in the last decade; this rate of growth is likely to continue in the future--causing both opportunities and problems as one generation system replaces another. The phenomenal data handling and information processing capabilities of the computer places us on the verge of secure, selective C^3I. This technological area probably will not directly impact the force structure; however, in conjunction with other technologies/systems it will enable a wider dispersal of forces and a higher degree of centralization (command and control). The nation and the Navy appear willing at present to pay the price of maturing this technology. In addition to the C^3I application, the miniaturization of computers impacts the guidance/control functions of platforms (e.g., high speed surface ships, aircraft, etc.) and weapons (e.g., cruise and guided missiles).

Satellite Systems. Satellite technology has opened a whole new dimension of Naval warfare which we are just beginning to tap. Satellites currently aid communications, navigation, environmental reporting, surveillance and targeting. As satellite systems and sensors become more refined, there will virtually be "no place to hide" for surface vessels of any appreciable size.

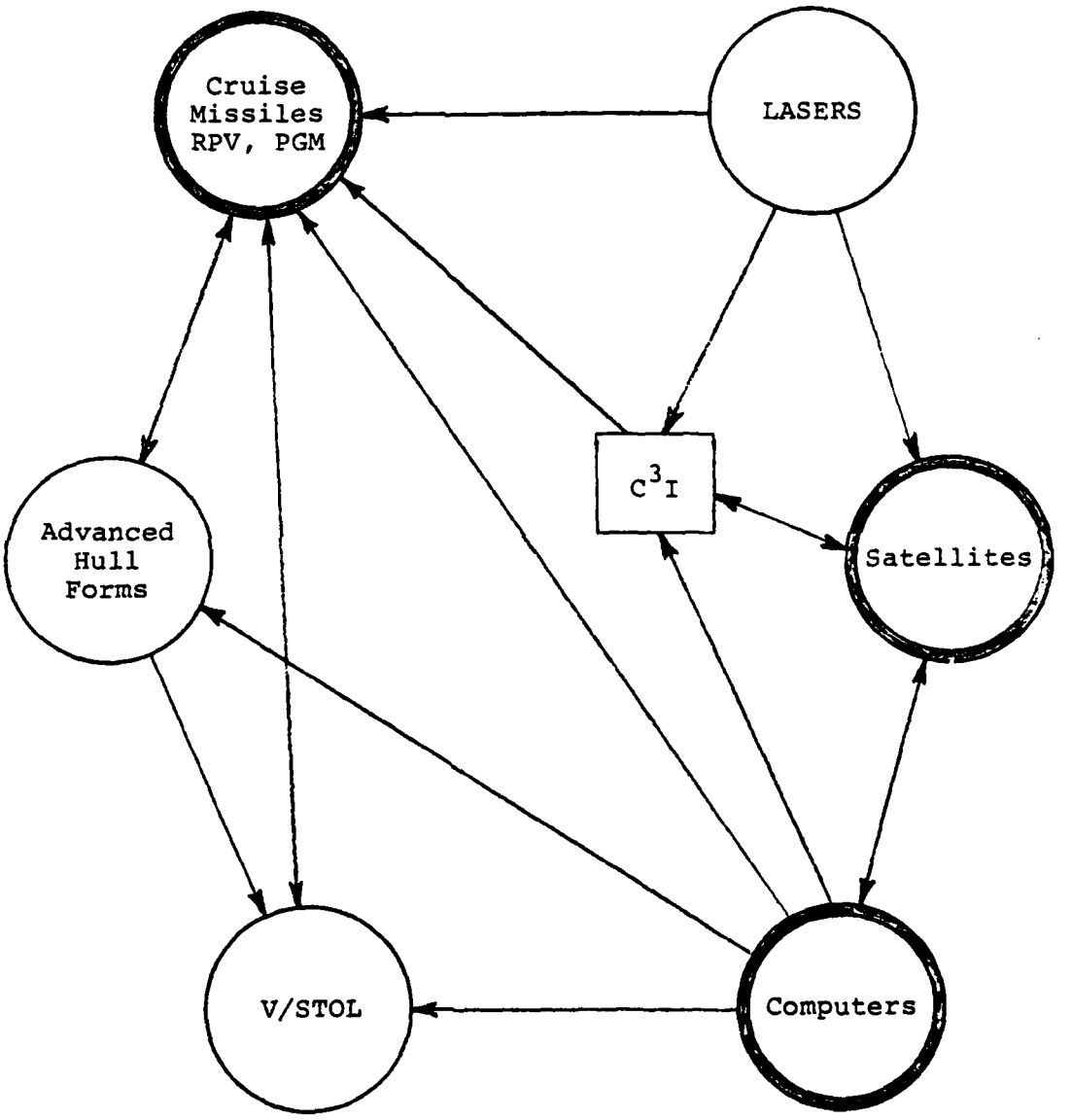

Figure 7.

The Interaction of CNO's Six Emerging Technologies and the C^3I Function.

With increasing sophistication and reliability of the systems linked with computers, the possibility of a near worldwide real-time tactical C^3I system will become a reality--if we are willing to pay the price; all current indications would seem to point to the fact that we are willing to pay the price to make these systems operational (e.g., OSIS, FCC, TFCC, FLTSATCOM, etc.).

Cruise Missiles. The introduction of cruise missile systems, such as HARPOON, has made a significant addition to the fleet's offensive capability. When the TOMAHAWK becomes operational, the striking range of combatant forces will be greatly increased. Remotely piloted vehicles (RPVs) have been successfully coupled with precision guided munitions (PGMs).* These innovations in weapon technology have ushered in the era of the "Hitile"--where one weapon successfully launched equates to one hit on the target! This is another technology for which we have been willing to pay the price and is coming to fruition. These weapon systems coupled with computer and satellite technologies through a maturing C^3I system may indeed revolutionize Naval warfare of the future as much as the introduction of the airplane did in the 1930s and 1940s. If these technologies are brought successfully to fruition, then one speculates on the impact on the force structure; it portends a trend toward "lower value" platforms (i.e., smaller, more mobile platforms manned by fewer personnel, but with greater firepower).

*A U.S. Army Aquilla RPV successfully directed a Copperhead guided projectile to a direct hit on a tank target during a recent demonstration. (See Aviation Week & Space Technology, p. 11, July 24, 1978.)

Advanced Hull Forms. Several types of advanced hull forms are in the early phases of R&D (e.g., hydrofoil, air cushion vehicles [ACV], planing craft, and small water plane area twin hull [SWATH]). So far, however, we are a long way from realizing Admiral Zumwalt's "100-knot Navy," perhaps threat development of the three technologies discussed above will force us to pay the price of developing and introducing operational advanced hull form platforms. These systems would tend to be much smaller, much more complex, and manned by fewer personnel than current combatants. Due to the low state of maturity of this technological area and the long leadtime necessary for development and introduction of Naval platforms, we will probably not see significant numbers of these platforms during our period of interest (1980s and 1990s)--barring unforeseen forces operating to change our projection of forces (e.g., only 10 combatant patrol vessels are currently projected for 1990 under our planning estimates for the Carter administration budget--see Table 8).

Vertical/Short Take-Off and Landing Aircraft. At this point in time, the question of the role of V/STOL aircraft in Naval aviation is unresolved. The technology is immature and seems to be plagued with problems--not the least of which is the answer to the question of whether or not we (both from an administration/national and a Navy perspective) are willing to pay the high price of bringing it to maturity. There are currently several studies attempting to resolve this issue. CNO's estimates, which may be deemed optimistic at this point in time due to

programming changes, of IOC for V/STOL aircraft were the early to late 1990s.* Therefore, this technology, as with advanced hull forms, is not likely to have a large impact on the force structure during the period of interest--unless outside factors intervene to force change, then the force structure of Naval aviation could alter drastically.

Lasers. Current laser technology is most promising in the areas of ranging, target designation and communication. We are apparently still a long way from fielding a cost effective, high power "death ray" weapon system. A policy decision has been made to have DARPA retain cognizance over HEL system R&D.

Implications of These Emerging Technologies. We have briefly explored (and attempted to highlight for the attention of manpower policy makers) six emerging technologies which potentially can affect the force structure of the Navy. If we ignore the possibility of unforeseeable events such as technological breakthrough or other operant factors which may force rapid, revolutionary change, we can tentatively formulate some summary implications regarding changes in the Naval force structure due to these technologies. It should be emphasized that these trends are merely the author's interpretations (opinions) of fuzzy images obtained while attempting to read a very dim and cloudy crystal ball.

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*U.S. Congress, Senate, Committee on Armed Services, Hearings... Part 2-Authorization Budget Priorities and Management Issues, GPO, 1978, pp. 1267-1271.

Let us begin by considering four possibilities which could compel change in the Naval force structure:

1. We are entering the era of the "Hitile."
2. We are on the threshold of an era in which there will be "no place to hide" for large surface vessels.
3. We are approaching an age of near real time C^3I.
4. We are in an era of increasing automation.

These factors will probably accelerate the move toward higher numbers of "low value" platforms. With the increased possibilities of automation presented by computer technology and the necessity to automate many functions for which man's reaction time is too slow, the Navy is able to consider new tradeoffs in the operating/investment ratio (costs for manpower have been the major factor in the past). If the shift occurs to a high technology, capital intensive Navy of more platforms manned by fewer personnel, then manpower planners are faced with new opportunities and problems.

The role of the manpower planner as a policy maker will increase in importance as he formulates alternative solutions to the problems that will face us. One of the preeminent problems suggested by this "new era" is that of the generalist versus the specialist. The "Generalist versus Specialist Problem" will raise a set of associated questions for which the manpower planner/policy maker must find answers; some suggested representative questions are:

> Should we develop a "general specialist" for the new platforms where fewer personnel must oversee more functions?

What abilities are required under these new conditions?

What are the personnel quantity/quality availability implications?

What are the grade/rank implications?

How do we retain these personnel (or indeed do we wish to and for how long)?

Each of these questions will in turn spawn a related set of problems/questions/opportunities for the manpower planner/policy maker; however, he needs to begin his deliberations early, if he wishes to influence outcome in a positive manner. The findings of the "HARDMAN" study* suggest that the optimum time is very early in the development cycle.

Conclusions and Recommendations

As we have seen there are many factors which affect the Naval manpower planning/policy making process over which the manpower planner/policy maker exerts little or no influence. Some of these factors are: Those due to external forces (e.g., the nature of the threat, or national economic conditions, etc.); Policy decisions of a national nature (e.g., the perception of and reaction to an external threat by a political administration); Current procurement programs which are "cast in concrete", and, the existing force structure. The best thing that the manpower planner/policy maker can do is to be aware of these factors and to make them a part of his considerations as he formulates plans/policy.

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*Chief of Naval Operations, Military Manpower Versus Hardware Procurement (HARDMAN) Report, CNO, October 1976.

We have also considered factors over which the Naval manpower planner/policy maker can exert influence. Among these factors are the following: Future development/procurement programs--by advising on manpower issues early in the process; and issues of internal Navy policy (e.g., "subtitutability" of enlisted division heads versus officers on the FFG-7, recruitment and training for a high technology Navy, and deliberate, rational promotion of a "climate" for attitudes of professionalism, careerism or occupationalism on the part of Navy personnel)--by formulating and recommending alternatives which promote the best interests of the Navy as a total system. It is recommended that the Navy manpower planner/policy maker be aware of and monitor technologies as they emerge in order to influence system development efforts early in the cycle.

As the issues which affect the Navy become increasingly complex, it is necessary to continue to refine and develop methodology and tools such as the NARM and the NPS Integrated Officer Planning Model to aid the manpower planner/policy maker.

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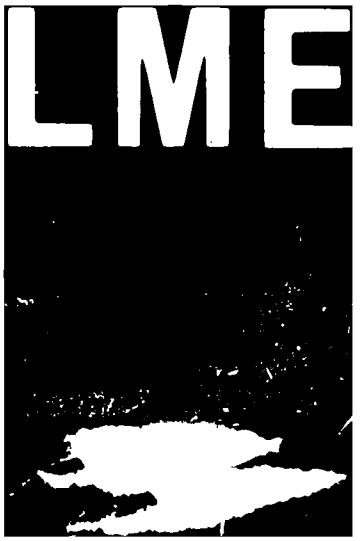
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